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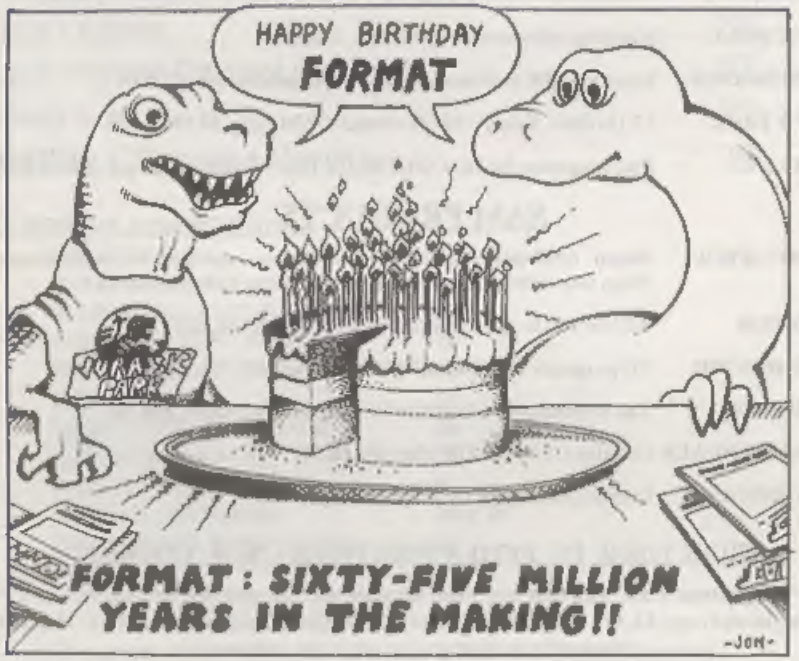
Vol.7 №1. September 1993.

FORMAT

FOR SPECTRUM AND SAM USERS



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NEWS ON 4

THE LAST YS

Well, the last *Your Sinclair* has come and gone, but not all over the country. The September issue, the final one to be published by Future Publishing, seems to have suffered from even worse distribution than usual with many parts of the country (including Gloucester) still not seeing copies long after it appeared elsewhere.

This now leaves ***FORMAT*** as the only widely available printed magazine for Spectrum and Sam users left.

CHOSE YOUR SEX

Now it is true to say that most games are written by men, about men, and for other men to play. Sad though this may be it is a fact of life (one my mum did not tell me about when I was growing up).

But FRED Publishing have just launched a game that breaks the mould - *The Witching Hour* - a game where you chose the gender of the main character. OK, so you ladies have to put up with playing the part of a witch called Grotta (and a not very glamorous witch at that) but you can't have everything. If you play the male option then you answer to the name Beardy [which I think is a totally unwarranted slur on us bearded men. *Ed.*]

The game, for 512K Sams only, can best be described as a graphic adventure. You move around very colourful screens picking up and using objects in your quest. The game was written using the *GamesMaster* system and is, as far as I know, the first commercial release of a game written that way. If *The Witching Hour* is anything to go by then we should be seeing many more programs written with *GamesMaster* in the future.

The game costs £4.99 (£4.50 to Fred or Format subscribers) and is available now from Fred Publishing in Dundee. At that price it is a must.

FASTER +3 BASIC

+3 Users can now get a faster Basic for their machine. Called MALLARD BASIC it is produced by Locomotive Software, the company who did so much for Amstrad's PCW computers.

OK, it is not new, but users have had difficulty in getting copies for some time. Now B.G.Services have obtained stocks (and say they can get more when they need them) so +3 users can upgrade whenever they want.

Sold as a complete package of CP/M PLUS and MALLARD BASIC it will set you back £29.95 plus postage (£1.50 in the UK). But considering Locomotive claims it is five times faster than normal Spectrum Basic, and coupled with the CP/M Plus which gives you access to a wide range of programs from other Z80 based computers, it could turn out to be the best £30 you ever spend on your +3.

Contact B.G.Services for more details.

AMSTRAD'S SPANISH FLY

Amstrad have flown the coup and closed down its Spanish Subsidiary writing off at least £25 million in the process. Founded in 1987, Amstrad Espana boomed early on, but failed the test of time.

URGENT we need your news. Anything you think other people should know about. Each item printed earns the contributor 3 months extra subscription (*please claim when next renewing*).

The Editor Speaks

Welcome to the first issue of Volume SEVEN, a very special issue in many ways. Of course it is the start of the new ***FORMAT*** year which is always nice, but more importantly it marks the retirement of an old friend - my BBC'B'. We have been together since 1984, when I purchased it to play *Elite*, and it has been a good workhorse. The very first issue of ***FORMAT***, the Intro issue that Rockfort/MGT helped distribute to early DISCiPLE owners, was produced on it using a very crude Page-Maker program. The early volumes of ***FORMAT*** were type-set on the Beeb and printed with a slow (and very noisy) daisywheel printer. In more recent years a 48 pin ink-jet and then a laser printer took over - but the Beeb kept going.

Well now the typesetting and layout will be done on an IBM clone (I don't like to call them PCs because all home computers are Personal Computers) . It will allow us to produce even better output and will cut down on a lot of the manual pasting up of copy to go to the printers each month.

It will take us a few months to get everything fully sorted out - so some readers favourite items might not be in this issue - but we will get there soon.

Well, if you are reading this it means Jenny got back from her holiday (coz if she didn't get back this issue would never have got to the printers. Two weeks without her - how did I survive?

Last month we announced the date for the Gloucester Gathering - remember it is on Saturday 13th November and I will print a map in the November issue. It is not an all-ticket affair but the space in the hall is limited and priority will be given to ticket holders (and anyway, if you order your tickets in advance you save money).

While there will be as many trade stands as we can fit in, this is primarily a get-together for Spectrum and Sam owners. We hope to have several people who will be available to demonstrate things and run little work-groups but it is obviously a little early to list the day's activities here. There is a large car-park, good bus service and nearby pub with reasonable grub. So it should be a good day for everyone. Remember tickets will cost £2 on the door or £1.50 if ordered in advance. There will also be a family ticket (for two adults and any number of kids [under 16s]) priced at £5 (£4 in advance). To order tickets send a cheque and an SAE for your tickets to be returned in.

We look forward to seeing lots of you in Gloucester on the day. If this one is successful then we may hold others.

There is a definite shortage of Spectrum software these days. I regularly have members on the phone trying to track down particular programs. In the past I have always advised people to go along to shows but software is drying up there as well. If any of you know of companies still producing Spectrum software then let me know. A list of company names and addresses could then be made available to anyone who is interested. We are also on the look-out for software to re-publish through the *FRS* page. It is up to us all to keep the Spectrum alive - it is far to good a machine to die.

Until next month.

Bob Brenchley, Editor.

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SPECMAKER The simplest Spectrum emulator on the market for SAM. 1000s of 48K programs work without the need for any conversion. Most other programs need only minor changes. All the extra SAM keys work in Spectrum mode. Uses SAM's parallel printer port and up to 360K of SAM's memory as a RAMDISC. Plus D, DISCiPLE and Opus discs* can be loaded into SPECMAKER and saved to SAM disc. Can now convert files between Messenger and SPECMAKER format and so save on valuable disc space. Now comes with pre-converted Spectrum ROM image - no need to have a Spectrum available anymore. Supplied on 3½" disc.

*Requires MasterDos and MasterBasic to use Opus single density discs

PC-SUITE From the same author as SPECMAKER. Now you can transfer your IBM data files by reading and writing IBM discs (720K format) on your SAM Coupé. PC-SUITE will even let you format IBM discs on your SAM. Write and edit SAM Basic programs on your PC. Use PC-SUITE to copy SAM data files to PC so you can print them on that high quality laser printer at work... nb. This is not a PC emulator.

As used by Format Publications to transfer articles/programs for this mag.

SPECFILE+ Now a Spectrum data filing program that never gets out of date. Specfile+ holds a massive 28K of data and, by using compression makes it seem like much more. Free-format style means no complicated file design before you get started. Very fast CASE selective and complex searches. Designed to be extended - so it grows as you do. Works with PLUS D, DISCiPLE or under SpecMaker on SAM. This program is a must for anyone with data to store. *Special +3 version also available on 3"*

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* GDOS programs still available

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SHORT • SPOT

YOUR HINTS, TIPS AND PROGRAMMING IDEAS

Edited By:- John Wase.

God bless my soul: it's Short Spot time again. A brief, nagging phone call from our Editor last night alerted me yet again to the fact that I'd not completed the text, and he was ready to go to the printer. Bob also, quite rightly, is complaining that I have too many long programs and not enough short ones - we're short of real Short Spots, folks. Let's have some: real shorties, so that we can get lots of different contributors into these columns.

Anyway, I wrote that last month, dashed off, late at night to pop it in our local post box, then phoned Bob. "It will be there Friday morning" said I.

Well it wasn't... It got there Thursday, the following week - minus the stamps I had so carefully stuck on, and labeled "48 pence to pay". Nuff said.

So, here's this month's first item, hot off the press a month ago.

"Ding dong bell; pussy's in the well. Just put some Izal down, and never mind the smell..."

What's he on about? Poetry; that's what it is. Roy Burford, a frequent contributor, was asked by his son-in-law, a C64 fan, to sort problems in this published program. So it got converted to the Spectrum as well, of course; the problem of space-padded string arrays was solved by Roy's space-stripping subroutine. It's not up to Dylan Thomas' standard, or Kipling for that matter, but maybe Ogden Nash would have chuckled at some of its efforts. Cummings certainly would. Give it a whirl!

```
  1 REM Clifford & Mark Ramshaw
    . Commodore 64 Games Book.
    Melbourne House. 1983. p18.
  2 REM Revised first to Radio
    Shack TRS-80-II, now to ZX
    Spectrum+ 128K by B.C.R.Bur
    ford 270293.
 10 REM ***Poetry***
 20 DIM j$(10,3,15): DIM v$(10,
    3,15): FOR i=0 TO 9
 30 READ j$(i+1,1),j$(i+1,2),j$
    (i+1,3),v$(i+1,1),v$(i+1,2)
    ,v$(i+1,3): NEXT i
 32 INPUT "Screen(2) or Printer
    (3)";o$
 33 IF o$<>"2" AND o$<>"3" THEN
     GOTO 32
 35 LET o=VAL o$
 37 IF o=3 THEN PRINT "Printer
    ready? Y/BREAK:": PAUSE 0
 40 PRINT #o; TAB 8;"***Poetry*
    ***''
 55 LET f1=0: LET mo=INT (RND*3
    )+1
 60 FOR i=1 TO 4+INT (RND*4): L
    ET v=INT (RND*10)+1
 65 LET j=INT (RND*10)+1: IF j=
    v THEN GOTO 65
 70 LET s$=j$(j,mo): GOSUB 600:
     LET k$=c$
 75 LET s$=v$(v,mo): GOSUB 600:
     LET w$=c$
 77 GOTO 80+INT (RND*11)*10
 80 PRINT #o;"The ";k$;" man ";
    w$;" beguiled her": GOTO 50
    0
 90 PRINT #o;"A ";k$;" woman en
    chanted me with ";w$;" blin
    king eyes": GOTO 500
100 PRINT #o;"In ";w$;" keeping
     with her ";k$;" vows": GOT
    O 500
110 PRINT #o;"Alas, she must ";
    w$;" leave his ";k$;" prese
    nce": GOTO 500
120 PRINT #o;"A breath of ";k$;
    " air ";w$;" rustled in the
```

```
    trees": GOTO 500
130 PRINT #0;"Another ";k$;" da
    y ";w$;" ended": GOTO 500
140 PRINT #0;"The ";k$;" hills
    marched ";w$;" across the h
    orizon": GOTO 500
150 PRINT #0;"and then:": GOTO
    500
160 PRINT #0;"The ";k$;" bell t
    olled ";w$;" once again": G
    OTO 500
170 PRINT #0;"The ";w$;" ";k$;"
     human arrived": GOTO 500
180 PRINT #0;"Life ";w$;" dawne
    d on the ";k$;" universe"
500 NEXT i: IF fl=0 AND RND>.5
    THEN LET fl=1: GOTO 60
502 PRINT '''Another? Y/N: "
503 LET a$=INKEY$
505 IF a$="n" OR a$="N" THEN ST
    OP
510 IF a$="" THEN GOTO 503
515 PRINT #0;'': GOTO 40
600 REM Strip trailing spaces
610 FOR s=4 TO LEN s$
620 IF s$(s)<>" " THEN GOTO 640
630 LET c$=s$( TO s-1): LET s=L
    EN s$
640 NEXT s
650 RETURN
1000 DATA "sorrowful","apathetic
    ","joyful","sadly","careles
    sly","happily"
1005 DATA "putrid","odourless","
    scented","foully","carefull
    y","sweetly"
1010 DATA "boring","enlightening
    ","interesting","tirelessly
    ","effortlessly","easily"
1015 DATA "ugly","plain","beauti
    ful","clumsily","gracefully
    ","gently"
1020 DATA "fat","thin","lean","n
    oisily","quietly","loudly"
1025 DATA "apathetic","ordinary"
    ,"super","pathetically","su
    perbly","excellently"
1030 DATA "irritating","calming"
    ,"exciting","sharply","cool
    y","excitedly"
1035 DATA "tortuous","hating","l
    oving","contemptuously","lo
    vingly","caringly"
1040 DATA "dying","living","newl
    y-born","painfully","wildly
    ","fitfully"
1045 DATA "stupid","ignorant","i
    ntelligent","foolishly","in
    telligently","wisely"
```

Typed it in, yet? Run it? Awful, aren't they. And there are 49 lines of Basic. Well, here's a competition. You've got 20 brief Basic lines. Write a better one. The winner will receive a years extension to their membership plus any two items from the FRS page. [OK John, bunkrupt me, see if I care. Ed!]. Entries in to me, marked *Poet's Compo*, by 15th October. Then I will try to get the result into the December issue.

Hands up if you've got a thermal printer. Roy has. He's got the SERIAL 8056 thermal printer, which has featured in this column before. Well, in this one, anyway, Fax paper works just as well as the special thermal paper. Better, in fact, because the print's darker. It's just that it costs about a third as much! Pretty good, *Roy*, and many thanks. Wonder if one could saw up a fax roll with a bandsaw (it makes a fairly clean job) and use it with one of those little ZX substitutes? Wonder how it would work in the Brother thermal printer? Anyone like to report?

Now some stuff from a Mr J.Smith. I haven't the faintest idea where he's from (he sent the stuff to Bob, who sent it on), but there's a hundredweight of goodies in the bag. He's been thumbing through the pages of *Popular Computing Weekly* between 1984 and 1989, and there's a tape and a disc. The tape contains original Spectrum programs; the disc, programs modified for SAM. ***FORMAT*** Reader Jim Collins (Your Letters, Vol 6, N° 2, Oct '92, pages 34-35) mentions a diver and a shark: maybe the oddball *Squids-in* is the answer to his query.

```
 10 REM definitions
 15 MODE 1: CSIZE 8,8
 16 POKE SVAR 618,0
 20 LET  dart=10: LET score=0
 30 GOSUB 1200: REM title
 40 GOSUB 1300: REM instructio
    ns
 50 GOSUB 200: REM characters
 60 GOSUB 300
 70 LET pl=0: GOSUB 400
 80 IF dart>0 THEN GOTO 60
 90 PRINT AT 19,7;"Your score
    is ";score
100 PRINT AT 21,2; "Another ga
    me?:Press y or n"
110 LET k$=INKEY$: IF k$="" TH
    EN GOTO 110
120 IF k$="y" OR k$="Y" THEN L
    ET dart=10: GOTO 60
125 IF k$"y" OR k$"Y" THEN PRI
    NT AT 21,0;"
                          ": PRINT
    #0; TAB 2;"I've had enough
     of this game": PAUSE 50
130 STOP
200 FOR A=0 TO 7: READ d,e,f,g
210 POKE UDG CHR$ 162+a,d
220 POKE UDG CHR$ 156+a,e
230 POKE UDG CHR$ 147+a,f
240 POKE UDG CHR$ 159+a,g
250 NEXT A: RETURN
300 BORDER 1: PAPER 1: CLS
310 LET x=30: LET y=12
320 PRINT AT y,x; PEN 6;CHR$ 1
    62
330 LET a=1: LET d=12: LET b=2
340 PRINT AT d,a; PEN 7;CHR$ 1
    56
350 RETURN
400 GOSUB 600: IF x<2 THEN GOT
    O 650
405 IF d<1 THEN LET d=1
406 IF d>20 THEN LET d=20
410 IF INKEY$="u" THEN PEN 1:
    PRINT AT d,a;CHR$ 156: LET
     d=d-1: PEN 7: PRINT AT d,
    a;CHR$ 156
420 IF INKEY$="d" THEN PEN 1:
    PRINT AT d,a;CHR$ 156: LET
     d=d+1: PEN 7: PRINT AT d,
    a;CHR$ 156
430 IF ABS x+y-a-d<2 THEN GOSU
    B 700: GOTO 540
440 IF INKEY$" " THEN GOTO 400
450 LET dart=dart-1
460 LET b=b+1
470 IF ABS (x-a)<2 AND ABS (y-
    d)<2 THEN GOSUB 700: GOTO
    540
480 IF ABS (b-x)<2 AND d=y AND
     b<31 THEN GOSUB 900: GOTO
     540
490 PRINT AT d,b; PEN 2;CHR$ 1
    47
500 PRINT AT d,b-1; PEN 1;CHR$
    147
510 GOSUB 600: IF x<2 THEN GOT
    O 540
520 IF b1 THEN GOTO 460
530 IF pl=0 THEN GOSUB 800
540 RETURN
600 PRINT AT y,x; PEN 1;CHR$ 1
    62
605 PAUSE 2
610 LET R=1
620 LET j=RND: IF j<0.5 THEN L
    ET R=-1
630 LET x=x-1: LET y=y-R: IF y
    >20 THEN LET y=20
635 IF y<2 THEN LET y=1
640 PRINT AT y,x; PEN 6;CHR$ 1
    62
650 RETURN
700 PRINT AT d,b-1; PEN 1;CHR$
     147: PRINT AT y,x; PEN 1;
    CHR$ 162: PRINT AT d,a; PE
    N 6;CHR$ 162: FOR k=1 TO 2
    0: BEEP .02,5: BEEP .02,5.
    5: NEXT k
710 LET score=score-20
720 RETURN
800 FOR k=1 TO 50: BEEP .02,5:
     BEEP .02,20: NEXT k
810 RETURN
900 PRINT AT d,b-1; PEN 1;CHR$
     147: FOR k=1 TO 5: BEEP .
    1,20: BEEP .1,30: NEXT k
910 LET b=31: LET pl=1
920 PRINT AT y,x; PEN 1;CHR$ 1
    62
940 PRINT AT y,x; PEN 7;CHR$ 1
    50
950 PAUSE 100
960 LET score=score+100: RETUR
    N
1000 DATA 252,16,0,129,4,16,0,6
     6
1010 DATA 255,63,2,36,15,56,31,
     0
1020 DATA 15,24,2,0,255,20,0,36
1030 DATA 4,34,0,66,252,65,0,12
     9
1200 PRINT TAB 10; FLASH 1;"SQU
     IDS IN "
1210 PAUSE 100: RETURN
1300 PRINT ' TAB 10;"INSTRUCTIO
     NS"
1310 PRINT "You are a diver arm
     ed with one"'"explosive da
     rt gun.You are"'"being att
     acked by a giant squid"'"a
     nd your only hope of survi
     val"'"lies in killing it o
     r avoiding"'"it.You will k
```

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VISA


```
     ill it if you hit"'"it in
     the centre_use the "'"SPAC
     E key to fire the dart."
1320 PRINT " Before firing the
     dart,you"'"can move up or
     down using the"'"u and d k
     eys.After you have"'"fired
     , however,you can't move."
     '"The squid does not swim"
     '"straight towards you,and
      it"'"may miss.If it gets
     near,it"'"will swallow you
     .You are allowed ten shots
     ,and then a score is prin
     ted"
1330 PRINT "Press ENTER to star
     t": INPUT z$: RETURN
```

I would have used others, but they're far too long for *Short Spot*, so we're going to have to feature them separately. Like there's a super Space-Invaders. Now that takes me back a bit....

No; let's go modern. Remember Ewen Wilby's *Alienbrain* programs? Lee Willis clearly had a play, and has come up with a development. It's called; wait for it; *The Bob Effect*. True: that's what he's called it, because this effect animates the balls, producing an effect similar to the *Surprise* demo by ESI, but in BASIC!

```
 10 MODE 4: PALETTE : CLS #: L
    IST FORMAT 2
 20 FOR x=1 TO 15: READ a: PAL
    ETTE x,a: NEXT x
 30 SetScreens
 40 CLS
 50 DATA 4,8,64,7,66,15,74,112
    ,71,120,79,119,124,127,127
 60 LET r=9,x=127,y=87
 70 FOR i=1 TO 14
 80 PEN i: CIRCLE x,y,r: FILL
    PEN i,x,y
 90 LET r=r-.5,x=x+.5,y=y+.5
100 NEXT i
110 GRAB a$,116,96,22,19
120 CLS
130 PEN 15: CIRCLE 127,87,9
140 FILL PEN 15;127,87
150 GRAB b$,116,96,22,19
160 CLS
170 LET t=0,Sc=1,OSc=2
180
190 SCREEN Sc: DISPLAY OSc
200 LET t=t+.05,OSc=Sc,Sc=Sc+1
210 IF Sc=NSc+1 THEN LET Sc=1
220 LET x=113*(1+SIN t*SIN (1.
    05*t)): LET y=86*(1+SIN (1
    .05*t))
230 PUT x,y,a$,b$
240 GOTO 190
250
260 DEF PROC SetScreens
270 LET Msc=3
280 SCREEN 1: DISPLAY 1
290 FOR x=2 TO 16
300 CLOSE SCREEN x
310 IF x<=Msc
320 OPEN SCREEN x,4
330 END IF
340 NEXT x
350 END PROC
```

Fed up? No? Well merge this in...

```
220 LET x=113*(1+SIN t*SIN (1.
    05*t)): LET y=86*(1+SIN (1
    .05*t)): REM HOURGLASS
```

Now try this one...

```
220 LET x=113*(1+SIN (.8*t)):
    LET y=86*(1+SIN (.6*t)): R
    EM LATTICE
```

And this...

```
220 LET x=113*(1+COS t*SIN (.5
    *t)): LET y=86*(1+SIN (.15
    *t)): REM SPAGHETTI
```

Super, aren't they. More next month.

Now, Lee has also included a real Short Spot. It's called *Quirk*.

```
 10 MODE 4: CLS #
 20 LET xrg=256,yrg=192,xos=0,
    yos=0
 30 PLOT 128,86
 40 DRAW 40,40,501
```

All right. How does it work?

I knew when I started the *Spirograph* business that I'd get something back. Alan Cox has written (well, several times; I've a wad of his stuff which I'm using bit by bit: many thanks, Alan). In his letter, he mentions a number of interesting points. Firstly; Barry Twyman's *Spirograph* program uses PLOT and DRAW. It's interesting that due to rounding errors, the curves which

should repeat themselves gradually go off course, due to cumulative rounding errors. However, we can't have everything. There are also a number of errors due to my lousy typing, and Alan's modified the program. Now I'll put this in, for I've no convenient way of sorting things out, but in future, please would you include (no, not just you, Alan; everyone) on your disc a working program, and also just those lines that have to be merged in. In that way I can check it, and then we need only print the merge lines instead of the whole program. Anyway, I can't do it in this case, so here's the well modified *SpiroG*:-

```
  1 REM spirograph program
  4 POKE 23658,8
 10 INPUT "Which ring? (A=150/1
    05, B=144/96)";R$
 15 INPUT "Inside (=I) or Outsi
    de (=O)? ";C$
 20 INPUT "Which wheel? - choic
    es are 24,30,32,36,40,42,45
    ,48,50,52,56,60,63,64,72,75
    ,80 and 84";W$
 30 INPUT "HOW FAR IN FROM THE
    EDGE OF THE WHEEL, AS A FRA
    CTION BETWEEN 0 AND 1? ";d
 35 IF R$="A" AND C$="I" THEN L
    ET r=105
 36 IF R$="A" AND C$="O" THEN L
    ET r=150
 37 IF R$="B" AND C$="I" THEN L
    ET r=96
 38 IF R$="B" AND C$="O" THEN L
    ET r=144
 39 LET r1=VAL W$
 40 LET d=d*r1
 43 LET F=80/(R-D)
 45 FOR t=0 TO 10*PI*r1/(r+r1)
    STEP 0.05
 50 PLOT 120+f*((r-r1)*SIN t+(r
    1-d)*SIN ((r1-r)*t/r1)),80+
    f*((r-r1)*COS t+(r1-d)*COS
    ((r1-r)*t/r1))
 60 NEXT t
 70 INPUT #0;"MORE OF THE SAME
    (M), OR A NEW RING/WHEEL (N
    )? ";Z$
 80 IF Z$="N" THEN GOTO 10
 90 IF Z$="M" THEN GOTO 30
100 GOTO 70
9998 STOP
9999 SAVE d1 "SpiroG"
```

Random numbers have also appeared recently, and you will remember the comments on Gavin Smyth's lovely *Galactoids* game in ZX Computing (RIP). Well, my two and a half pages of decimal data are for the whole game, of course, and the random number generator, which is really quite short, is as follows:-

```
PUSH HL
LD HL,(23670)
INC HL
LD A,63  ;3F hex
AND H
LD H,A
LD (23670),HL
LD A,HL
POP HL
RET
```

Where 23670 (5C76hex) is normally the system variable SEED; obviously not needed with a code random number generator. The meat of this is to make sure only 0 to 16383 is PEEKed.

To work well, a random number generator needs an unpredictable sequence of numbers and also a uniform distribution of numbers within a prescribed range. So Alan did a histogram. The ROM does not, in fact, produce uniformity: there are some very large hiccups. These are not, as one would think, due to RETs but to CALLs. Obvious when you think about it, isn't it.

Many thanks Alan.

My SAM's just been talking to me. Honest! (Well; nearly). Chris Dodd has sent a little pack of programs which includes this one of a nice sunny face, talking to you. The title underneath is "Mr Pac says "Good Evening"": very appropriate because it's now getting late, and I'm typing like billy-oh. Anyway, there he is with his mouth going up and down. It's brilliant. So much for

multimedia! you can't beat a SAM, can you!

```
 10 DEF PROC set_up
 20 FORMAT "d3",1,60
 30 PALETTE
 40 MODE 4
 50 CLS
 60 END PROC
 70 DEF PROC face
 80 PEN 6
 90 CIRCLE 127.5,86.5,80
100 CIRCLE 100,120,20
110 CIRCLE 154,120,20
120 PEN 2
130 CIRCLE 127.5,85,15
140 FILL PEN 6,100,142
150 FILL PEN 2,127,85
160 PEN 10
170 CIRCLE 127.5,85,13
180 FILL PEN 10,127,85
190 END PROC
200 DEF PROC smileup a
210 PEN 0
220 PLOT 80,60
230 DRAW TO 174,60,0
240 PLOT 80,60
250 DRAW TO 174,60,a
260 FILL PEN 0,127,59
270 PEN 7
280 END PROC
290 set_up
300 FOR d=0.3 TO 2.4 STEP .3
310 CLS :face
320 smileup d
321 PRINT AT 0,0; PEN 7;"Mr PA
    C BY"; AT 0,22;"CHRIS DODD
    "
330 PRINT #1; PEN 4; PAPER 1;"
       MR PAC SAYS GOOD EVENI
    NG    "
340 SAVE "d3:face"+STR$ d SCRE
    EN$
350 NEXT d
360 CLS
370 FOR f=0.3 TO 2.4 STEP .3
380 LOAD "d3:face"+STR$ f SCRE
    EN$
390 NEXT f
400 FOR f=2.1 TO 0.3 STEP -.3
410 LOAD "d3:face"+STR$ f SCRE
    EN$
420 NEXT f
430 GOTO 370
```

And while I'm at it, Chris has included a little program to demonstrate **OVER 3** on the SAM. I'm sure Bob will love this one (and Jenny, too).

```
 10 CLS #
 20 MODE 4
 30 PALETTE 15,0
 40 CSIZE 8,16
 50 LET a=0
 60 FOR f=0 TO 9
 70 PRINT AT a,f; PEN 15;"FORM
    AT IS BEST"
 80 LET a=a+1
 90 NEXT f
100 CSIZE 8,8
110 FOR g=5 TO 1 STEP -1
120 FOR t=0 TO 255 STEP g
130 PLOT OVER 3;t,0
140 DRAW TO OVER 3;t,175
150 NEXT t
160 NEXT g
170 PALETTE
```

Finally for this month, let's get back to the Speccy. Miles Kinloch of Edinburgh (of the +2 sticking keys fame) has added to his comments about the sticking keys. Firstly, he did mean two separate capacitors, one across diode 33 and the other across diode 35. Even then there were certain values of the "I" register which caused a few keys to stick. He has therefore now connected a separate capacitor across each diode, and has had no further problems. His new ones are actually 200pf, not 100pf, but the value is apparently not particularly critical. Secondly, since he also has an older Spectrum 128, he has noticed that on this the built-in CAT! command lists only the Ramdisc filenames. This routine of Miles gives a fully detailed Ramdisc catalogue on the older machines. Nice one.

Incidentally, *Catram* could also be made to work on DISCiPLE, but Execute files run at a different address in the DISCiPLE RAM, and Miles doesn't know what that is, he's sure someone will know, and all that needs to be changed is the second and third data items in line 40 holding the low/high bytes of the

address the code is to be run at. C'mon, folks, let's hear from you.

```
10 CLEAR 39999: LET c=0
20 FOR a=40000 TO 40439: READ
   d: POKE a,d: LET c=c+d: NEX
   T a
30 IF c<>42629 THEN PRINT "ERR
   OR IN DATA!": STOP
40 DATA 1,214,59,197,215,107,1
   3,62,2,215,1,22
50 DATA 225,34,118,92,17,33,0,
   25,6,32,126,229
60 DATA 215,16,0,225,35,16,247
   ,24,32,70,105,108
70 DATA 101,110,97,109,101,32,
   32,32,70,105,108,101
80 DATA 116,121,112,101,32,32,
   76,101,110,32,32,32
90 DATA 83,116,97,114,116,62,1
   3,215,16,0,6,32
100 DATA 62,95,197,215,16,0,193
   ,16,247,237,91,131
110 DATA 91,33,20,0,25,125,254,
   0,40,2,24,4
120 DATA 124,254,236,200,6,10,1
   97,229,243,1,253,127
130 DATA 30,7,237,89,126,30,16,
   237,89,251,215,16
140 DATA 0,225,35,193,16,232,22
   9,62,32,215,16,0
150 DATA 225,237,91,116,92,213,
   243,1,253,127,30,7
160 DATA 237,89,126,50,118,92,3
   5,126,50,119,92,35
170 DATA 126,254,0,40,21,254,1,
   40,16,254,2,40
180 DATA 12,254,3,40,7,254,4,40
   ,3,175,24,3
190 DATA 60,60,60,30,16,237,89,
   229,245,237,121,42
200 DATA 118,92,126,237,89,251,
   193,225,209,213,229,197
210 DATA 245,1,9,0,254,0,40,10,
   254,1,40,11
220 DATA 254,2,40,12,24,15,33,2
   54,0,24,13,33
230 DATA 7,1,24,8,33,16,1,24,3,
   33,25,1
240 DATA 25,6,9,126,229,215,16,
   0,225,35,16,247
250 DATA 24,36,80,114,111,103,1
   14,97,109,32,32,78
260 DATA 117,109,46,65,114,114,
   97,121,83,116,114,46
270 DATA 65,114,114,97,121,66,1
   21,116,101,115,32,32
280 DATA 32,32,193,241,245,197,
   243,1,253,127,237,121
290 DATA 42,118,92,35,94,35,86,
   62,16,237,121,251
300 DATA 213,62,32,215,16,0,193
   ,215,43,45,215,227
310 DATA 45,62,23,215,16,0,62,2
   7,215,16,0,62
320 DATA 32,215,16,0,241,254,1,
   40,81,254,2,40
330 DATA 77,209,243,1,253,127,2
   37,81,42,118,92,35
340 DATA 35,35,254,0,32,4,35,35
   ,35,35,94,35
350 DATA 86,46,16,237,105,251,2
   13,254,0,32,12,33
360 DATA 15,39,237,82,56,36,62,
   76,215,16,0,193
370 DATA 215,43,45,215,227,45,6
   2,13,215,16,0,225
380 DATA 6,8,35,16,253,193,237,
   67,118,92,235,33
390 DATA 89,0,9,229,235,201,209
   ,6,5,62,45,197
400 DATA 215,16,0,193,16,247,24
   ,218
500 PRINT "PRESS ANY KEY TO SAV
   E ON DRIVE 1": PAUSE 0
1000 SAVE d1"CATRAM.EXE"x,40000
```

Once again, I have to thank all you patient members of ***FORMAT's*** readership for sending in the items. Please keep them coming to:-

John Wase,
Green Leys Cottage,
Bishampton,
Pershore,
Worcs,
WR10 2LX.

Bless you all - and see you next month.

'I'm just glad we're only going for the weekend'

SAM'S MOUSE INTERFACE

A Reader's Review By:- David Finch.

We've all used a mouse at some time or another, on the school's ST or a friend's Amiga. Just in case there's someone who doesn't know what one is, it's a small box on the end of a lead that you slide on a desk to control a pointer of some sort on the screen (and it doesn't eat cheese).

So, what do you get for your £39.99. Tipping everything out of the packaging, you will find the mouse itself, an interface and a disc. But surely you don't need an interface since there is a port on the back of each and every SAM with mouse written underneath it, don't you? No. The interface is the usual SAM interface box with a cable from one side to your SAM's mouse port. There is a further mouse port from this interface and some circuitry in between. My expansion port hole of the interface box is covered up with a long 'plasticy' SAM Computers sticker. Mine was upside down so I peeled it off and restuck it!

The mouse itself is (or at least in my case) a two button "Alfa Data" brand mouse made for ST's and Amigas, with the switch on the ST setting. In other words, you have an ST mouse port on your interface and so, if you want to splash out, I see no reason why you can't use an ST optical or infra red mouse to plug into it. Optical mice don't have a small rolling ball and three rollers to sense movement but 'scan' a special mouse mat, which means no moving parts and smoother mousing (and higher price). Infra-red mice don't have leads, just like your TV remote control. The fact that you have an ST/Amiga mouse also means that if you are unfortunate to have wasted money on one of these computers and you ever decide to use it instead of your SAM (although I don't see why!), you can use your *SAM Mouse* instead.

The mouse itself is just like any other mouse to use. If you nudge it to the left, the pointer nudges to the left, and if you zoom up and right, so does your pointer. What more do you want? As long as you keep your desk free of bits and crumbs it should run smoothly enough, (and if you can't resist munching digestives then a mouse mat may help, for a few pounds from anywhere, or even a hardback book).

I can't compare it directly with the PBT (Blue Alpha) mouse since I haven't used one. However, since that is a joy-stick mouse, it can't do much more than a joy-stick. In other words, if you zoom in a direction your pointer will just dawdle as fast is if you were using a joy-stick. You have to move the mouse at one speed in other words. However, if you want to use it on your Speccy then the joy-stick mouse may well be a better choice, if you can still get one that is.

So what about the software? Many utilities have mouse options with icons, and so on, to click on. You get a modified version of Flash! on the disc which comes with the *SAM Mouse* (which also contains a slidy puzzle game and a line

drawer). However, I have always been used to using keys to draw and find it much easier to do detail and straight lines with them so I rarely use the mouse option on Flash! It is almost impossible to draw detail on Flash! with the mouse, although a mat does help. If anyone is developing a better art package, which is much needed, then please give it better mouse control. The Sound Machine is an entirely different case, because you are using the mouse as a pointing device instead of drawing and so precision is not so important. If you are at one side of the screen and want to click on an icon on the other side, you can dart across in an instant. One you have used a mouse like this then keys seem tediously slow.

Similarly with games; Batz 'n Balls from Revelation is infinitely easier with a mouse since it only takes a moment to whizz across the screen to hit the ball. Similarly, Triltrex from Fred Publishing is also easier under mouse control. Brainache from the Sam Supplement people is another game I know uses mouse and I'm sure many more are on their way. The mouse should appeal to games players as well as utility users too!

Programmers can use the mouse from Basic when the mouse driver code is loaded in (supplied on the disc) although it's quite tedious, programming all your options to be selected from mouse. For most Basic programmes, keyboard control would be more suitable. That's not to say that programming with the mouse driver is difficult, but when you have few options to select from it is far easier to use GET and press a key than to design icons and mess about with GRABs and all the co-ordinates.

The modified Flash! VIEW option in SCREENS may not seem to work. You need to WHOLE BLOCK in the BLOCK menu before using VIEW. It seemed to work normally on the keys only version.

I can recommend it to everyone who wants to get the best use out of the many games and utilities that are available now and many new programs appearing for it.

Editor's Note.

Reader's Reviews is a new section designed to let you have your say about your favourite piece of software or hardware. Submissions should be as short as possible. Send as a text file (make sure you don't put any printer control codes in) on disc with a printed copy. Each review printed earns the author 3 months extra subscription (more in exceptional circumstances). Don't be afraid to write about something already reviewed - we will still consider it if you have something new to say.

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I HAD A DREAM

By:- John Eyre.

The sunlight limped through my window casting shadows around the room. I looked out despondently at the grey leaden skies. Now, living on the south coast, I normally take a long summer break from my self inflicted role of part time freelance computer programmer, but then - was this really summer?

I had been powering up and exercising my various Spectrums, QL and SAM. A rare treat for some of them, its good for their electrolytics so I'm told.

I was waiting for a program to load from tape, watching the little blue and yellow lines dancing on the screen as I indulged in a spot of nostalgia. I thought ruefully about the waining support for the Sinclair machines, almost all recent news seemed to be doom and gloom. I wondered whether I too should desert the ranks of the Spectrum and SAM faithful and move on to computers new.

Perhaps I should upgrade my QL, an expensive business, or buy an Amiga, an A600 or A1200? Then if I bought a monitor too, the cost would be nearly as much as a PC which might be a better bet, but a 386 or 486? However, did I really want to spend that much when my only interest is a bit of programming. So perhaps I should stick with my old and much loved machines, but then do they have a future?

This is a circular and very unproductive argument which I have yet to resolve.

Anyway, I had just read the final issue of YS and was reflecting on what an inspiration the Spectrum had been and how there was more software (games) than for any other computer. Unfortunately it was now losing out to dedicated games machines. Allegedly some games for the 16 bit consoles are really quite something, and so they should be the amount they cost, but have you seen the graphics on the hand-helds!

It was then that this amazing idea came to me.

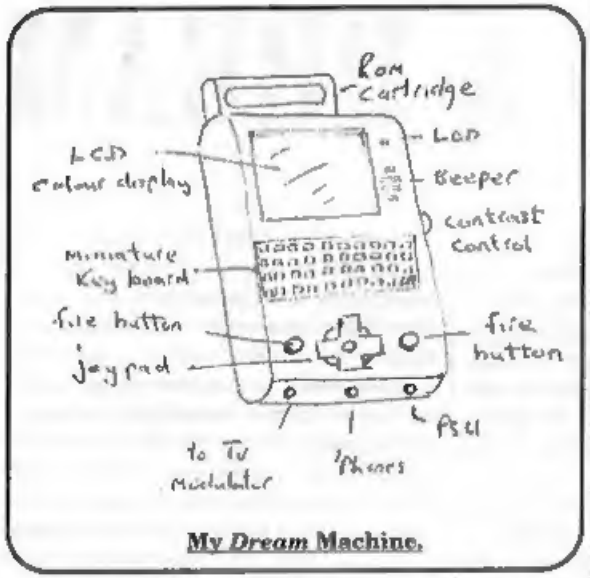
Imagine this slim black plastic case, sort of A5 ish in size. At the top is a small display, colour LCD like on mini TVs, and below this is a miniature keyboard with 40 rubber keys (sound familiar). It has a built in joy-pad with fire buttons on the left and right, about 10% of the population are left handed you know.

If you can't imagine it, take a look at the picture.

It would be powered by a Z80, low power CMOS of course to conserve batteries, with programs loaded via a ROM cartridge. 64K by 8 bits of EPROM comes on a single chip for a couple of pounds.

Now hey presto you have a hand-held computer with instant loading, ideal as a games machine but with its keyboard and 256 by 192 pixel display it has much greater possibilities.

The Catch 22 when launching a new computer is that nobody wants a games



My *Dream* Machine.

machine without games but who will produce high quality games unless there is a large market. This is where my little black beauty scores. Yes you've guessed, it will run Spectrum games with a 64K snapshot loaded from a ROM. As YS points out many many thousands of Spectrum games have already been produced, and with graphics far superior to current hand-helds.

There is something in this for everyone. Commercial Publishers get to re-package the best of these existing games in ROM and sell them at exorbitant prices (as usual) and of course there will be tiny royalties for the original authors. A resurgence in interest mean new programs will be profitable again and there is bound to be spin-offs for suppliers of peripheral equipment.

I'd definitely buy a machine like this and I don't even like playing games. It all fits together perfectly, how could it fail. I'm sure Bruce Gordon and Adrian Parker ought to hear about this idea.

Suddenly, back on planet earth. The tape loader has crashed and so has my dream, isn't there always someone around with a pin to burst your bubble. Outside the skies are still grey and now the rain is falling. Well perhaps my idea wasn't so perfect.

Do you realise how expensive colour LCDs are and many good games were multiloads? Try doing that with a ROM when the software thinks it's talking to a tape recorder. There are probably lots of other problems if you care to think rationally. Not the least being that a snapshot includes a copy of the Spectrum ROM.

Now Amstrad may have withdrawn restrictions on it's use in PD or Shareware but for commercial ventures? Sounds about as likely as Terry Venables getting his job back.

Oh well, you've got to have a dream.

Now where was I, upgrade the QL, buy an Amiga or PC. Then again maybe I should complete some of these unfinished SAM programs I have laying around first.

++++++++++++++++++++++++

Articles like the one above are always welcome - ideas only become the copyright property of FORMAT if there is ever any chance of making money out of them.

But seriously. Anyone else with something to say just drop us a disc with the textfile on and, provided it looks interesting to our readership, we will print it.

MACHINE CODE WITHOUT THE TEARS

Part 20.

By:- Carol Brooksbank.

This month we are starting to write a rather longer program than anything we have done so far. It will take two or three episodes to complete it.

It brings together a number of the things we have been studying - writing to screen, keyboard reading, the floating point calculator - and also introduces one or two new instructions and methods. But most of all it introduces you to a way of writing a longer program.

We shall be writing the program as a collection of short subroutines, each complete in itself. When the program is finished, some of the subroutines will be called from Basic, and some will be called by other subroutines. It is rather like building a wall, but we have first to manufacture each individual brick - the subroutines - before we can put them together into a structure.

There is a good reason for doing things this way. If you break a program down into its smallest individual parts, you can test each little bit as you write it. If you try to write a whole program and test it when it is finished, I can guarantee it won't work, and you won't have the faintest idea where to start looking for the bugs. And you will lose your way when you are writing the program too, because the whole thing will be so complex that you will lose track of exactly what you are doing and what you need to do next. By breaking it down, you keep things simple. The listing for our program takes 11 pages of A4, even without comments or explanations, but only a couple of the individual subroutines run to a page. Most of them are only a few lines.

So what will our program do? It will allow us to write text to the screen in re-proportioned type, automatically enlarging each letter by the height and width factors we decide. The lettering can be saved as SCREEN$ files, for use with FLASH, DTP, fancy screendumps or what you will. The width factor can be a decimal - 2.5 times the normal, for example - though using decimals can sometimes give odd effects like striped letters. You have to experiment to see what factors give the best results. I had intended that the height factor could also be a decimal, but in using the program I discovered that a decimal height factor never gave readable letters, so I dropped the facility and height factors must always be integer. It speeds the program up if you don't have to make arrangements for decimals, so we might as well leave them out where they are of no practical use.

Quite simply, the program will work by replacing each pixel in the letter's character pattern by a block sized (width factor * height factor). Clearly you can't set half a pixel, so if the width factor is, say 2.5, the program will set (or reset) the nearest integer number of pixels. Then, it will calculate how far to move to start the next pixel block by multiplying the number of pixels already copied by

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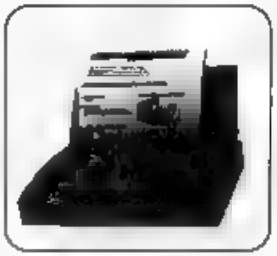

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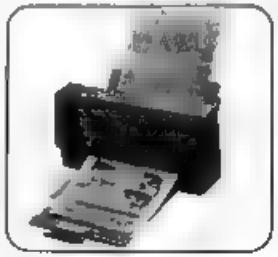

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the width factor, rounding it to the nearest integer, adding it to the starting point for this character, and starting the next block there. If the width factor is integer, that will be at the pixel after the last one done, but if it is decimal, the rounding to the nearest integer may make the new block overwrite the last pixel or two of the previous one, and that is what will make the finished letter assume the right proportions. Sometimes, the new block may start a pixel or two after the last one, which is why some decimal factors result in striped letters.

The main subroutines in the program will be the ones which draw the individual blocks in set or reset pixels according to the status of the character bit (called BIT_DR and RUBOUT for set and reset respectively); one called BYT_DR which considers all 8 bits in one byte of the character, calling BIT DR or RUBOUT as appropriate and moving on to the next position between bits, and one called CHR_DR, which calls BYT_DR 8 times to draw the complete character, moving down the screen by the height factor between each byte. There will be dozens of other subroutines, doing things like calculating the height and width of a character, checking whether there is room on screen for another character, stacking height and width factors, finding where on screen a particular x,y co-ordinate is etc, etc. Oh, and there are one or two extra routines, called from Basic, which allow us to transform the text to "mirror writing" or upside down lettering (or both together).

That is what the program does, so let us get on with it.

```
ORG 31000
```

We need a low ORG address, because Sam users will be paging the screen to 32768. All the code must therefore be below 32767. The Sam version is 1284 bytes long (Spectrum 1201), so this address will do nicely. It leaves nearly 500 bytes for you to add your own improvements when we have finished! And it leaves enough room for the Basic we need, which a lower address might not. This program will show how Basic and machine code can interact, making a more flexible program than machine code alone would allow.

```
HT      DEFS 1      ;multiplication
        factor for height - must be
        integer.
X       DEFS 1 ;x co-ordinate for
        top left corner of first
        character. Value changes as
        program proceeds.
Y       DEFS 1 ;y co-ordinate of
        top left corner of first
        character. Value changes as
        program proceeds.
MULTW   DEFS 10  ;multiplication
        factor for width - W - in
        string form.
BITH    DEFS 1 ;BIT_DR bt counter -
        starts at HT and decrements to
        zero
BITW    DEFS 1 ;BIT DR w counter -
        starts at nearest INT(W) and
        decrements to 0.
VALBYT  DEFS 1  ;value of byte
        currently being copied.
ORIGX   DEFS 1 ;temporary store for
        original value of X when X is
        being updated, but reference
        needs to be made to its start
        value.
CHRADD  DEFS 2      ;address in
        character table of char being
        drawn.
COUNT   DEFS 1 ;CHR_DR counter -
        starts at 8 and decrements to
        zero
CODE_ST DEFS 1 ;store for code read
        from keypress.
```

We begin with a list of program variables. I have added an explanation of each, but you can, of course, omit the notes if you wish - leaving out the semi-colon and everything following it.


```
STKZERO EQU 160 ; SAM 225
RESTACK EQU 61 ; SAM 49
ENDCAL  EQU 56 ;SAM 51
EXCH    EQU 1 ;SAM 6
STKTEN  EQU 164 ;SAM 236
MULTIP  EQU 4 ;SAM 0
ADD     EQU 15 ;SAM 1
STKONE  EQU 161 ;SAM 233
STOMEM3 EQU 195 ;SAM 211
GETMEM3 EQU 227 ;SAM 219
DELETE  EQU 2 ;SAM 7
SETSTR  EQU 5633 ;SAM 274
DIVID   EQU 5
STKBYT  EQU 11560 ;Sam omit
FP_A    EQU 11733 ;Sam 289
FP_BC   EQU 11685 ;Sam 289
CHARS   EQU 23606
LASTK   EQU 23560
FLAGS   EQU 23611
```

Next, we have a list of literals, ROM addresses and system variables. As always, we use only officially documented and recommended ROM routines. Where we need to use any other ROM routines we shall copy them out in full as part of our program. This will ensure that our program will always run on any version of the computer. Be sure to enter the right values for your computer.

At this point, you must include the library routine DEC.FPC which I gave you in the last episode. It runs from the label DEC.FPC to the instruction JR DECLOOP.

```
STK_W   PUSH HL
        LD HL,MULTW
        CALL DEC.FPC
        POP HL
        RET
```

This little subroutine stacks the width multiplication factor W as the last value on the FPC stack. Because W may not be an integer, Basic pokes it into some of the 10 bytes at MULTW as a string terminated by CHR$ 13. Our old friend DEC.FPC, which stacks numbers held in memory in this way, is called to stack W in full floating point form.

```
INT_W   CALL STK_W
        CALL FP_A
        RET
```

This even shorter routine finds the value of INT(W) - a figure used quite a lot in this program. It calls the previous subroutine to stack the full floating point form of W, and then the ROM routine FP_A, which compresses the top number on the stack to the nearest integer and returns it in the A register. We can use FP_A because there is no danger of W being bigger than 255 and needing a double register. If you tried to draw a character more than 255 times as wide as the original it would not fit on the screen.

You can already see how our building bricks approach is working. INT_W calls STK_W and STK_W calls DEC.FPC. Imagine how complicated INT_W would be if we had to write all those instructions out for it. This way, we use a routine we already know is OK because we used it last month - DEC.FPC. And STK_W and INT_W are then so simple that we can see at a glance that they will work.

```
NX_BIT  PUSH AF
        CALL STK_W
        POP AF
        LD B,A (Spectrum omit)
        CALL STKBYT
        RST 40
        DEFB MULTIP
        DEFB ENDCAL
        CALL FP_A
        LD B,A
        LD A,(ORIGX)
        ADD A,B
        LD (X),A
        RET
```

This is the subroutine which calculates the x co-ordinate for the start of the enlarged block which represents one pixel of a character. It is called with A holding the number of bits from this byte

that we have already drawn. This value is preserved while STK_W is called to stack the width factor. Then, the number of bits done is also put on the FPC stack, and multiplied by W. The result, compressed to the nearest integer, and fetched in A by FP_A, is transferred to B. The x co-ordinate of the starting point of this enlarged character is fetched from ORIGX, added to (bits done*W) and stored in X as the x co-ordinate for the next bit block.

```
PX_ADD  LD A,175
        [redacted]
        JR C,INVALY
        LD B,A
        AND A
        RRA
        SCF
        RRA
        AND H
        RRA
        XOR B
        AND 248 ;Bin 11111000
        XOR B
        LD H,A
        LD A,C
        RLCA
        RLCA
        RLCA
        XOR B
        AND 199 ;Bin 11000111
        XOR B
        RLCA
        RLCA
        LD L,A
        LD A,C
        AND 7 ;Bin 00000111
        LD B,A
        LD A,7
        SUB B
        LD BC,16384 (Sam only)
        ADD HL,BC (Sam only)
        [redacted]
INVALYM DEF B 22,21,7
        DEFM "Y INTEGER OUT OF R
             ANGE"
INVALY  LD A,2
        CALL SETSTR
        LD B,25
        LD HL,INVALYM
YLOOP   LD A,(HL)
        RST 16
        INC HL
        DJNZ YLOOP
        EI
        CALL SCREENOUT ;Sam only
        RET
```

The last subroutine we shall write this month is a copy of a useful Spectrum ROM routine, with minor variations. This is one of those non-guaranteed routines which are in the ROM, and very handy to use, but which we must copy out as part of our own program because there is no guarantee that you will always find it in the same place in any future version of the Spectrum, and I have no idea where to find something similar in Sam!

It is called with the y,x co-ordinates of a screen pixel in BC, and it returns with HL holding the screen file byte with the pixel in it, and the pixel bit number in that byte in A. This is one of my minor changes - the Spectrum routine returns pixel position (MOD 8), so you have to deduct the contents of A from 7 to get the true bit number. I have done that just above the two instructions for Sam users only. Sam users have to add 16384 to the screen file address in HL because they page the screen to 32768, whereas the Spectrum screen is at 16384.

The routine starts by checking that the y co-ornate is valid. If not, it jumps to the error message at the end of the routine. The bytes at INVALYM are 22 (AT) and 21,7 so the message is printed AT 21,7. From INVALY down to DJNZ YLOOP is a perfectly ordinary screen printing routine of the sort you have met dozens of times before.

But the next instruction, EI, is new. A computer normally stops what it is doing 50 times per second, checks the keyboard, updates the clock, and then goes on about its business. You can speed things up tremendously by telling it not to bother with all that. The instruction DI Disable Interrupts tells it not to interrupt its activities. But of course, it means that the keyboard is not being checked so if you return to Basic with interrupts disabled, there will never be any response to the keyboard again - unless you switch off and on again, thus losing your program. So before we return to Basic if this error message is generated we must use EI, Enable Interrupts. Many of our other subroutines do not return to Basic. PX_ADD does not if the y co-ordinate is valid. But where error messages, or the termination of the program, means RET takes us to Basic, we must use EI. We could avoid using DI, of course, which would take the problem away, but this would be a very slow-acting program if we did. You will meet the DI instruction later when we write the main spine of the program. Sam users also need to page the screen out before a return to Basic.

If you want an explanation of the logic of this subroutine, you will find it fully explained in *The Complete Spectrum ROM Disassembly* by Ian LOGAN and Frank O'HARA, page 115.

That is all for now, except to say that Fig.1 was prepared with the program, using the ordinary Spectrum typeface, so you can see what we are aiming at.

```
ODD TYPES
ODD TYPES

EVEN ODDER
W=2.15
```

Fig.1 W=.8, HT=1

See you next month.

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The HELP PAGE

Edited By:- Kevin Gould.

Dean Shepherd of Bristol has a problem that whenever he enters an upper-case letter using the SHIFT key, the SAM prints the letter followed by a spurious tilde (~) character or two. This happens with either SHIFT key but not when using the CAPS LOCK key or when pressing a SHIFT key repeatedly

As it happens with both shift keys it is most unlikely to be a keyboard membrane fault and therefore I suspect there is a fault somewhere in the keyboard logic circuitry. If you can live without the tilde character then fortunately there is a partial solution to the problem. You can change the tilde into a void character by entering: KEY 137,15 and nothing will happen when a tilde character is keyed, or in your case not keyed! This will work with *The SECRETARY* if you break into the program to enter the command, but if a program has it's own keyboard routine which is not identical to that used by SAM, or if it uses code 15 for some other purpose then it will not get round the basic fault.

Adding disc drives to the Spectrum has produced letters from several people. The letters were basically on the same theme, the PLUS D as the interface, 48K or 128K's, and single floppy drive. Can the Universal 1mb and 2mb drives, advertised by *W.Richardson* in ***FORMAT***, be used as the second drive ? The questions are:-

a) Would data stored on the 1Mb drive be compatible with data from a 780K drive? b) Is the cased version literally ready-to-run? c) In the uncased version, where does the power come from? d) What DOS is used? e) If the Universal is the second drive, how is it connected?

Quite a lot there. First, the 1mb refers to the unformatted size of the disc. On a PC this gives 720K of formatted space while on the DISCIPLE/PLUS D and SAM you get 800K of space. The 780K is often, incorrectly, giving as the size because under GDOS and SAMDOS 20K is used by the system to hold the directory. The cased version should be ready to run while the uncased version will need you to build a power supply and case. The Universal drive started of as the MGT *Lifetime* drive several year ago, although the design has changed a little. DOS depends on the interface you use - not the drive. And finally, just ask for the correct cable - they will know how to do it.

Bob Barton of Rotherham has a problem with a disc he was using with Tasword. Having saved a letter on the disc, got out of Tasword to do something else and then gone back to reload the original letter, he found that he got the message '86 Format 'TRK- 0 lost 1320:3'. As the disc drive appeared to be operating correctly with other discs then there is, as he correctly surmised, a fault on the directory track on that disc. On the question of whether a 'Disc Doctor' program is available for SAM, yes, from

Kobrahsoft called Sam Dice. See their advert in ***FORMAT*** and the review by Carol Brookshank (Vol 4 Nº 10). To help you recover your Tasword files, the following short programs may help. The first prints a list of the main parameters of all current code files in the directory.

```
10 REM ++ CODE FILE LISTER ++
20 CLEAR 59999: LET AD=60000:
    READ AT 1,0,1,AD,40: POKE
    SVAR 14,70
30 FOR J=AD TO (AD+20224) STE
   P 256
40 LET TYPE=PEEK J: IF TYPE<>
   19 THEN GOTO 100
50 LET NUM=(J-59744)/256: LPR
   INT "File Number: ";NUM;
60 LPRINT TAB 16;"Name: ";MEM
   $(J+1 TO J+10);TAB 37;"Typ
   e: Code";
70 LPRINT TAB 55;"Address: ";
   (((PEEK (J+236) BAND 31)-1
   )*16384)+(PEEK (J+238)*256
   )+PEEK (J+237))
80 LPRINT "Length: ";((PEEK (
   J+239)*16384)+(PEEK (J+241
   )* 256)+(PEEK (J+240)));
90 LPRINT TAB 16;"Start Track
   : ";PEEK (J+13); TAB 37;"S
   tart Sector: ";PEEK (J+14)
   ; TAB 55;"Sectors Used: ";
   (PEEK (J+ 11)*256+PEEK (J+
   12))''
100 NEXT J: STOP
```

The program above is written for MasterDOS so if you only have the standard DOS you will have to substitute a sub-routine for the READ AT statement in line 20 which will read in sectors 1 to 10 of tracks 0 to 3 using a FOR/NEXT loop. Having produced a printout of all the code files, use the next program to try to reclaim those files with start address of 32678 by entering the appropriate parameters for each file.

```
10 REM RECLAIM Tasword FILES
20 CLS : PRINT AT 10,5;"PUT F
   AULTY DISC IN DRIVE"''' TA
   B 5;"Press any key to cont
   inue": PAUSE
30 CLEAR 32758: LET AD1=32759
   : LET AD2=32768
40 INPUT "Length of File ";LF
   ' "Start Track ";ST' "Star
   t Sector ";SS' "Sectors Us
   ed ";SU
50 FOR J=1 TO SU: READ AT 1,S
   T,SS,AD1,1
60 LET ST=PEEK (AD1+510): LET
    SS=PEEK (AD1+511), AD1=AD
   1+510
70 NEXT J
80 PRINT AT 10,5;"PUT NEW DIS
   C IN DRIVE" '''TAB 3;"Pres
   s any key to continue":PAU
   SE
90 INPUT "Enter file name:
   ";FN$: SAVE FN$ CODE
   AD2,LF: PAUSE 10: VERIFY
   FN$ CODE   100 CLS: PRINT
   AT 10,0; FN$; " SAVED.
   Press any key to
   continue"; PAUSE: GOTO 20
```

Two items from Bob Barton. First a thank you to R.H.Doughty for his program in the December Help Page to invert a screen dump to give black on white, which he finds very useful. The second is to record the helpful advice he received from Star Micronics UK Ltd. on how to obtain the pound sign on the Star LC24-200 colour printer. This is to set the dip switches as follows:- D1 off, D2 off, D3 off, D4 on. Bob said that he had a very swift and friendly reply from David Pearce, the Technical Support Engineer; it is pleasing to hear of a major company giving such support to the small customer.

Now a letter from Bob Hatchett. Bob has a Spectrum +2, PLUS D and a Amstrad DMP 4000. He has two copies of Tasword+2 on cassette. His first problem is a ? being printed at the start of each line, his second being cursor key failure. Problem 1 is, I hope, easy to cure. Refer to the PLUS D instruction manual section under the heading *Printing From A Commercial Word-processor*. That explains the use of the POKE @6

command which is used to turn the filtering of printer control codes ON or OFF. A common symptom of the filtering being ON if that no-printable characters show as question marks, as in your case, printed down the left hand margin. This is in fact a CHR$10 (Line Feed Character) being sent by the program but not getting through the filter. Enter a BASIC line POKE @6,1 (the @ is Symbol Shift 2) before you load the program and that problem should vanish. Use POKE @6,0 to return to normal or just reboot your system. Problem 2 is more difficult and has often been mentioned in John Wase's *Short Spot* column. If you have followed the instructions on the original Tasword +2 distribution tape, and loaded their keyboard fix, and you still have the problem then you will need to read a few Short Spots to see how others have got round the problem. Please let me know how you get on.

Next, a thank you to Andrew Toller. He sent me a letter regarding languages for the Spectrum. Fortran from Mira, LISP from Serious Software and PROLOG (Micro-Prolog) from Logic Programming. As at July 93, Mira is based in Oxford, Logic Programming is based in London and I have yet to trace Serious Software in Kent. I can supply full addresses if required.

Is it possible to convert Spectrum 48K BASIC into IBM QBasic? Well, yes, but... And it is a big BUT. QBasic is a derivative of the old Microsoft Basic and, although much advanced over some of its forebears, it lacks many of the features of Spectrum and SAM Basic - both of which are nearer to ANSII standards. It would therefore take rather a lot of effort to translate programs. However, there is another option, the Spectrum emulator called Z80 sold by B.G.Services, which will run on most PCs. Written by Gerton Lunter it emulates both 48K and 128K Spectrums and would allow you to run your software direct.

Now for a follow-up on Stuart Hale's problem in the July issue of ***FORMAT*** on changing the line spacing on *The Secretary* using a Citizen 120D. Assuming that the correct codes for the Citizen have been set in the list of printer parameters we must look elsewhere for a solution. Ettrick Thomson has written to me pointing out that the line spacing is set by line 6310 of the program which reads:-

```
6310 PRINT #4; CHR$ 27;"A";CHR$
     PEEK(pra+3);.....
```

where pra+3 contains the value of n chosen when you set the line spacing, or the default value of 12. If this line does not already match the line spacing control codes of the Citizen 120D then try changing it. Thank you Ettrick.

And now a quick question which we are looking for an answer to. In Tasword 2 which has been converted to PLUS D disc, if a file is not found on Loading the error message is given and you end up in BASIC, is there a way of detecting the message and if a file is not found, to keep in Tasword possibly at the "file to load " prompt. If anyone can help then we would love to hear from you.

Thank you to Ray and Mike for their contributions. As usual send your problems/answers to the following addresses.

Anything not SAM or +3:-
Kevin Gould (Format Help Page),
2, Barleyfield Close,
Heighington,
Lincolnshire, LN4 1TX.

Anything SAM:-
Ray Bray (Format Help Page),
'Elmsleigh',
4, Tidworth Road,
Porton,
Salisbury,
Wiltshire, SP4 0NG.

Anything +3, CP/M:-
Mike Atkins (Format Help Page),
70, Rudgwick Drive,
Bury,
Lancashire, BL8 1YE.

May we please ask for your assistance. If you are sending a disc(3.5 or 3") with your problem then please include where possible hard-copy. If you can, please use a printer for letters or, if handwriting please print clearly. Return postage will see your disc returned. Programs should not auto-run but state the line they run from. THANK YOU.

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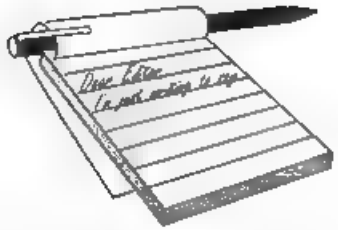

YOUR LETTERS

Dear Editor,

I recently received a postcard from a Romanian called Stanculescu Marin who had found my advert in an old Your Sinclair for a fanzine I ran. *Blitz* lasted until the SCPDSA vanished. (Where on earth is Brent Stevens now? Is the SCPDU disc still going? I paid good money for my Samsational Software discs and only received one!)

Returning to my main point, could you please print this Small Ad referring to Stanculescu's plight:

Stanculescu Marin can't obtain any Spectrum software, books, or magazines in Romania, he owns a Spectrum +48K. Can anyone help him? Write to Str.Ciurulaasa, Nr.3. Sect.4. O.P.7. COD 75445, BUCURESTI

Your quarterly SF magazine proposal sounds great - a wonderful diversification for Format Publications. The games supplement idea should definitely be followed up, especially with the promising previews of new SAM software in the final issues of YS. Not even Arab millionaires can get in the way of the Lemmings!

Yours sincerely, Peter Moffatt.

Well Peter, I'm not sure what help will be forthcoming for your new friend in Romania but I'm sure some nice readers will come to his aid. I'm still looking for an editor for both the new mags but I'm keen to get on with things - oh for an extra 24 hours in each day *Ed.*

Dear Editor,

I have had the +3 for just over a year and so far games are about the limit but I would like to do more serious computing and to this end I have recently purchased a 'PLUS D, ARTIST 2 and ADVANCED OCP ART STUDIO'. Unfortunately I am not having much success with this equipment.

I have written to DATEL asking them for assistance, so far they have not replied. Perhaps you could advise me?

I would like to see some articles aimed at beginners like me. I would like to know what peripherals are available for the +3 and how they may be combined for example, is it possible to use the GENIUS mouse with the PLUS D, is it possible to connect the disc drive supplied with the PLUS D directly to the computers printer port with appropriate connector?

Yours sincerely, E.J.Turner.

I would not recommend the PLUS D for use with the +3 - they were never designed to go together and are far from happy with each other. Artist 2 is compatible in 48K mode but not the 128K version. There is no mouse system produced now that will work with the PLUS D as far as I know *Ed.*

Dear Editor,

While playing 'Prince of Persia' there are places where, if you jump, you fall into some sort of limbo. You run

endlessly along the bottom of the screen.

Do you know if this is a bug or part of the design? Is there any alternative to starting again? Do you also know a way to start at the higher levels?

Yours sincerely, Gerald Jess.

Sad to say the bugs in PoP are down to poor 'play testing' by SAMCo. If you play the game just as the programmer wanted you to, then fine.

I think maps have been published on *FRED* and Colin will be able to supply any back-issue you want. ***Ed.***

Dear Editor,

Back in April 1989 you published an article by John Hamilton about HiSoft 'C', dealing primarily with how to make a back-up copy for the DISCiPLE or the PLUS D - the problem is that of copying OPENTYPE files, since SAVE will apparently not handle them.

At the end of that article John said that he hoped to be back soon with a short series on the 'C' language, but as far as I can see this never appeared.

One reason could be that he never wrote it, and another that you felt the subject was of such limited interest to the majority of your readers that you could not justify using your limited space for it.

I recently purchased Leon Volausek's copy of 'C' via his small ad in the July '93 issue, and frankly I am baffled by the language. I need some help, so I wondered whether, assuming he is still a subscriber, you could let me have John's address so that I can write to him.

Secondly. One of the things I have long lusted for is a keypad for my 128K Spectruma, which as far as I know was only ever marketed in Spain.

Now some while ago Juan B.Guillen Serra provided me with a reprint from a Spanish magazine about the keypad, and it was apparent from this that a vital part was a Sinclair-copyright IC, which meant that a DIY version was not possible.

However, given Amstrad's current relaxed view of copyright on Spectrum items, a DIY version using an EPROM copy of the IC would seem to be a possibility. The key to this is to obtain a copy of the original, so I wrote off to Juan asking whether it would be possible to get one on the Spanish secondhand market. Unfortunately he must have moved, since I have had no reply.

I do not know whether you have any Spanish readers, but if you do I should be grateful if you could publish my address:- Pen-y-Maes, Ostrey Hill, St Clears, Dyfed SA33 4AJ. UK.

If anyone would be prepared to sell me a keypad or alternatively, help me advertise for one in Spanish computer magazines - I know not a word of Spanish. I will pay all your expenses.

Yours sincerely, Alan D.Cox.

There are a few Spanish readers (although I would like lots more of course) so keep your fingers crossed Alan. As to 'C' it was a case of the article never arrived on my desk - after all this time I'm sorry to say I can't find his address. Still, he may read this, you never know. ***Ed.***

Dear Editor,

In the latest issue of ***FORMAT*** (wot a great mag) there's a letter from Daniel Huby about corrupting discs.

You forgot to mention the most common cause of this problem, the snapshot. If a disc sector map exists in memory when a snapshot is taken then the directory is not read. Fine unless you either snap to the other drive or put a different disc in the drive to snap to. In either of these cases the free sector map is wrong and the result is overwritten files causing the error messages that Daniel gets.

My KA program (from way back when) will show these corruptions but once its happened Den, D Files is lost man.

Yours sincerely, Nev Young.

Now where have I heard that name before? Still, thanks for pointing out my lapse - not the first time and I doubt the last. ***Ed.***

Dear Editor,

As one of many members who, I am sure, have a large number of Spectrum programs (taken from ***FORMAT***, books and magazines) that they would like to convert to work on SAM, but find that the SAM System Variable is not the same as the Spectrum one (except in a few cases) then CRASH!!

I wonder if one of our Boffin members would like to compile a list setting out the Spectrum variable address number with its comparable SAM SVAR number. I would suggest the most used variables taken from the Spectrum Manual Chapter 25.

In spite of my age (82) I am going to start on Carol's Machine Code programs (to keep the old grey matter going).

Finally each time my eagerly awaited ***FORMAT*** arrives I find it goes from strength to strength.

Yours sincerely, Eric M.Day.

I don't think that's too much to ask for Eric. I'm sure someone will have a go for you. ***Ed.***

Dear Editor,

I've owned a Coupé for over 3 years and I like to think I'm one of the better coders for the dear old machine, with my 'serious' credit being KEdisk (PC/ST disc reader) and my 'non-serious' credits as a few rather neat demos that have appeared on *Outlet* or as part of the forthcoming Entropy megademo 'Statues of Ice'.

However, I finally (a week ago) gave up and bought a second-hand A500. I know this is somewhat of a defection but there is a reason. The SAM, although a wonderful machine to use and to program, is just too slow. As a demo coder I know just how far the machine can be stretched, and believe me, it's not far enough. The only think that could possibly make me feel any degree of enthusiasm for the SAM would be a hardware upgrade that addressed both the problem of speed (it actually takes 5 frames minimum to scroll a mode 3/4 screen) and sound (it's only possible to play samples with the screen turned off and at a maximum frequency - I estimate -of 8kHz for a sample tracker....). How this machine is supposed to compete with the Atari Falcon, the Commodore A1200 and the various consoles on the market is beyond me.

Another reason is that I've made about £150 in the two years since I wrote KEdisk, which is rather laughable when you consider the size of the code and the amount of work that went into it.

Enigma Variations also did the machine a great deal of harm, by producing very little software of any worth at all and then complaining when no-one bought it. *Sphera* was promised as a brilliant game and was mediocre. *Pipemania* was a diabolical conversion which never should have been allowed out of the testing stage.

I'll be keeping my SAM, mainly because I doubt if I'd be able to sell it,

and for the next few months I'll still be coding for it, but once my current project is finished I'll probably consign it to the cupboard where my old 48k Speccy is gathering dust. It's a difficult decision for me because I was one of the first to get the Coupé way back in Christmas '89, but I don't feel that there is anyone currently working on the Coupé who is prepared to address the difficulties I've mentioned by making such an upgrade available at a low enough price.

In some ways I won't be sorry to see the back of the old machine, however, I've read too many ridiculous mailshots (things are looking up.... software is on the increase.....) from the various companies who have been in charge of it, and yet not one of them has ever admitted that a hardware upgrade is the only way that SAM could ever be a 'serious' machine.

I've sent this letter to a number of Coupé magazines - whether or not you print it is up to you.....

With the best of luck for an uncertain future.

Yours sincerely, Geoff Winkless.

I must say I thought long and hard before printing this letter - how can anyone be so negative?

OK so the SAM Coupé is not the fastest machine on the block, although it's Basic is faster than anything I've seen on affordable home machines. Yes, to scroll a full mode 4 screen takes time, but so what, what makes you think every game has to have a scrolling screen? Use the features of the machine, don't go crying to mummy just because it lacks the ones you think it should have.

Why take the *easy* way out and sample other peoples sounds - write your own using SAM's sound chip (better than any other sound chip on the market). Stop being a stupid *demo* writer (nobody wants all these demos), grow up, adopt a professional attitude and you may find you do a lot better.

And above all, don't knock other peoples efforts if you are not even man enough to try and write commercial software yourself. ***Ed.***

Dear Editor,

Just a short note to explain my request for genealogical programs or explanations on how to adapt the utility programs for genealogical use on the SAM. The reason I ask for this is twofold, firstly my wife has just started to research her family history and has already generated a large quantity of paper. Secondly I have recently realised that there must be many thousands of genealogists in Britain and if good software was available for a computer such as the SAM then there would be a wide open market to people without the funds to buy a P.C. which seems to be the usual computer to use.

Yours sincerely, K.Murray-Taylor.

Not a subject I know a lot about although, strangely enough, I have recently been sent a small program, by Mr Kempees from the Netherlands, which looks like it could be usable - however he did not indicate what he wanted me to do with the program (do I publish it Mr Kempees, perhaps you could drop me a line). ***Ed.***

Dear Editor,

A few months ago my long-time friend and fellow member of INDUG, Bas Porter, sadly, passed away. It was he who introduced me to membership and, I am pleased to say, his widow passed to me his collection of ***FORMAT*** magazines.

I refer to Vol 3 Nº 2, October 1989, page 11. Scroller by Terry Simpson. The program crashed after scrolling the second message for the second time.

You will recall that he stores the contents of BC in (STBC) initially in order to be able to return to the START of the program. Unfortunately, the author neglected to reload BC with the initial contents (STBC) before returning to START so that (STBC) then receives the current contents of BC.

Solution: Either (i) add the following instruction to the source code:-

```
1105 LD BC,(STBC)
```

or (ii) change the last line of decimal bytes to:-

```
170 DATA 205,142,2,225,193,123,
     254,252,192,35,11,120,177,3
     2,172,237,75,148,92,42,148,
     92,233,18295
```

Where the values underlined are the ones to be added or changed.

If translation errors can be avoided, members will find the program produces a beautifully smooth scroll.

Finally, I recommend Shimon Young's Swipe in the August issue of the same year, p33, to 128K users.

Yours sincerely, B.C.Roy Burford.

Dear Editor,

Re your request in the August FORMAT for a program to read BBC discs from a PC.

I don't know of the program that you describe, but I do know of a company who can do the job, should you not be able to find the program that you want.

The company is called Mapej (weird name!), and they advertise that they can "transfer your data between CPC, PCW, BBC, PC and Macintosh" on 3"/3.5"/5.25" discs.

Their address is: Mapej, Meadow View, Quinta Crescent, Weston Rhyn, Oswestry, Shropshire, SY10 7RN.

Telephone: 0691 778659

I hope this information is of use to you.

Yours sincerely, David Finch.

Thanks David, the only person to come to my aid so far. But I would still like to get hold of the PC program if I can. ***Ed.***

Dear Editor,

First of all I would like to thank you for / congratulate you on the production of a great magazine, of which I have been receiving since Volume 4.

Secondly I have a suggestion, or maybe it should be called a request, and that is for the return of a public domain section, like the one that Brent Stevens used to write (by the way, what happened to him and the SCPDSA??). Although the commercial scene is growing fast I think many people are still interested in the vast amount of PD around, and with the end of *YS* there is no way (that I know of) of finding out about new PD software.

My third (and final!) point is a question, would it be possible to send PD discs to ***FORMAT*** for review, because as far as I can see there is no way of alerting the SAM world to the arrival of new discs

Yours sincerely, Lee Willis.

That's the second time Brent Stevens' name has come up in this issue - what did become of the man?

PD may soon be put in some form of order. Colin McDonald, at Fred Publishing, and I have talked about jointly sponsoring a PD library. More news, as they say, coming soon.

Letters may be edited or shortened to fit on the pages.

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EASY PRINTER CONTROL

ON SAM

By:- John Redfern.

In my original article on Using Printer Codes - which seemed to be well received by FORMAT readers - I covered the control of your printer with the use of Control Codes which took the form of LPRINT CHR$ 27;CHR$87;CHR$1 etc. While this is the usual way of doing things from Basic, I thought that it should be possible to do things in a different way similar to that adopted in Word Processors such as TASWORD and OUTWRITE, that is just inserting a CONTROL CODE into the text so that it modifies the text as it is printed.

The following method only applies to the SAM Coupé as it depends upon the facility to redefine the keys; not available on the Spectrum.

The command that we use is **KEY posn,x** where posn is the actual key position as defined in the KEYMAP and x is the value to be defined at that position.

I have chosen the CNTRL shifted functions of the keys as these do not generally have any normal functions except for a few suchas CNRTL I, CNTRL P, & CNTRL B, and have redefined them as shown in Table 1 below.

FUNCTION	ON	KEYCODE	OFF	KEYCODE
Emphasised	W	270,69	S	271,70
Double Strike	E	261,71	D	262,72
Italic	R	252,52	F	253,53
Condensed	T	243,143	G	244,146
Double Width	Y	240,87	1=on	0=off
Underline	U	249,45	1=on	0=off
Superscript	Q	279,83	0=on	
Subscript	A	280,83	1=on	
Sub/Sup cancel	O	267,84		
NLQ or DRAFT	L	266,120	1=NLQ	0=DRAFT
ESC (CHR$27)	Z	272,155		

Table 1.

To make the defining of the codes simple it is most convenient to put them into a short program on the lines of:-

```
10 KEY 270,69: KEY 271,70
20 KEY 261,71: KEY 262,72
30 KEY ...etc.
```

This can then be saved and loaded in when required to redefine the keys at any time.

The values defined onto the keys are those given in your printer manual as the decimal codes for the function required. e.g. To print in enlarged format:-

ASCII	ESC	W	n
Decimal	27	87	n
Hex	1B	57	n

[ON n=1 : OFF n=0]

Therefore we define key CNTRL Y as 240,87. The 240 is determined from the Keyboard map in your SAM manual as follows; the Y key is N°.30 + 210 for the CNTRL shift giving 240, and the 87 is the decimal for W from the printer manual.

When you then press CNTRL Y, a capital W will be inserted into your text string and similarly with the other defined keys.

To use the CONTROL CODES it is simply a matter of inserting them into the Text String in the LPRINT statement in the appropriate places.

When inserting Codes in the text string they must be put inside the quotes and each must be preceded with CNTRL Z(CHR$27)i.e.

```
LPRINT "This is an [CNTRL
Z CNTRL R] ITALIC [CNTRL Z
CNTRL F]    word"
```

will print:- This is an *ITALIC* word

Those codes which require a 0 or 1 to switch a function ON or OFF should have the appropriate 0 or 1 placed immediately after the control code with no spaces.

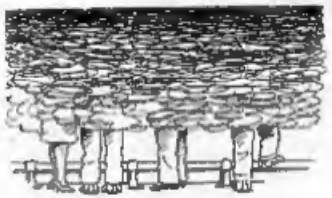
The control codes can be 'stacked' to produce combinations of styles to give many different effects.

The above key definitions are not the only ones that you can use and you will find that most of the codes in your printer manual can be defined onto the SAM keys and it will probably suit most people to set up the ones that they wish to use on the keys that they find most convenient.

Please feel free to experiment with them and remember that it can't do any harm to your Computer or Printer and to re-initialise your printer you can turn it off or do:-

```
LPRINT "[CNTRL Z] @"
```

And that's all for now. Happy printing.



'I never even noticed it before I gave up smoking'

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